DOCUMENT RESUME

ED 368 242 HE 027 254

AUTHOR Haynes, Ray; And Others
TITLE Team-Based Programs: The EMP. An Industry/University Partnership-The Educational Model for the 21st Century.
PUB DATE 16 Feb 94
NOTE 6p.; Paper presented at the International Quality & Productivity Center National Conference (4th, San Francisco, CA, February 15-16, 1994).
PUB TYPE Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Business Administration Education; *Engineering Education; Experiential Learning; *Graduate Study; Higher Education; Intercollegiate Cooperation; Masters Degrees; *Partnerships in Education; Program Descriptions; *School Business Relationship; Student Experience
IDENTIFIERS *California Polytechnic State University

ABSTRACT

California Polytechnic State University's College of Business and College of Engineering have joined forces to create a joint Engineering Management Program (EMP). Students holding undergraduate engineering or equivalent degrees enter and earn both Masters in Business Administration and Masters of Science in Engineering in 24 months. The program aims to develop graduates who can integrate technical and engineering issues with business management concerns. The program has worked closely with business to match industry needs particularly for the global marketplace. The program integrates a business and engineering curriculum with industry sponsored "learn by doing" components. The formal curriculum consists of core courses offered in the first year, advanced classes offered in the second year and culminating classes and seminars which bring together students, faculty, partner representatives, and industry participants. The "learn by doing" components include graduate internship experiences during the first summer. During that experience students start a Team Project which involves the investigation of real and unstructured problems or opportunities in the partner firm. The culminating class/seminar during the second summer brings together participants in an intense and interactive series of sessions. The theme of 1993 Summer Seminars was "Managing Change for Competitive Advantage." The 1994 theme will be "Future Directions for Winning Organizations." (JB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

TEAM-BASED PROGRAMS: THE EMP

Ray Haynes, Earl Keller, Reza Pouraghabagher, and Don White (SLO)

ED 368 242

An Industry/University Partnership - The Educational Model for the 21st Century

HE 027 257

PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

Ray M. Haynes

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☑ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

BEST COPY AVAILABLE

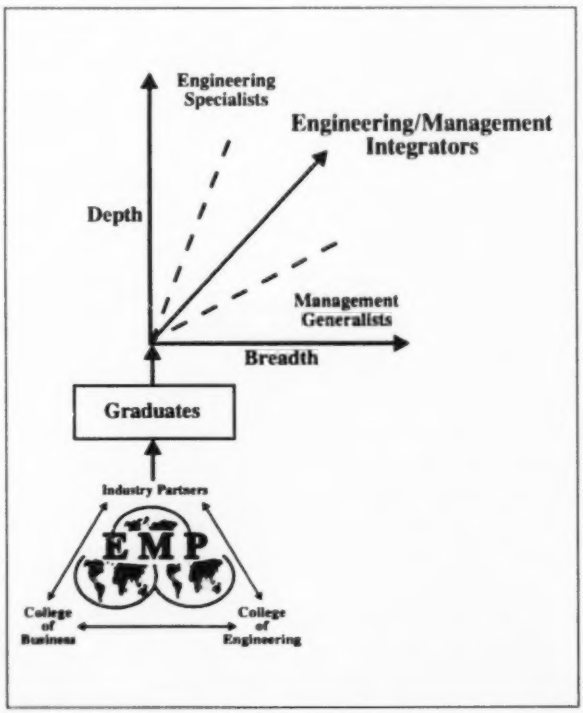
TEAM-BASED PROGRAMS: THE EMP

Ray Haynes, Earl Keller, Reza Pouraghabagher, and Don White (SLO)

An Industry/University Partnership - The Educational Model for the 21st Century

The Cal Poly EMP

Cal Poly is offering a unique Engineering Management Program (EMP) to prepare graduates to meet the challenges of accelerating technological change, increasing global competition, and the critical need for integrated approaches. The EMP is jointly offered by the Colleges of Business and Engineering. Students enter the program with undergraduate engineering (or equivalent) degree and earn both MBA and MS in Engineering degrees concurrently in 24 months. The EMP is designed to develop graduates who can effectively integrate technical/engineering issues with business management concerns. The dual-degree EMP is without precedence in the California systems of university education — representing attainment of a new level of integration between business and engineering disciplines.



Collaborative efforts across both colleges has created a bold vision with an exciting new direction. An industry partnership has been established to transform the EMP into a tightly integrated program that crosses disciplines and that actively involves industry, government, and academic sectors. The EMP partners are committed to educational leadership that is responsive to rapidly changing industry needs.

The EMP Partnership

The EMP Partnership is the educational model for the 21st Century. Strong positive feedback on the EMP Partnership has been received from the Cal Poly President's Council, Deans' Councils, students, faculty, and from top managers of numerous firms. The President of Cal Poly has summarized the Partnership direction as:

> "Cal Poly is progressively integrating engineering high technology with business disciplines and industry needs to set new standards for the global marketplace."

The EMP Partnership is attractive to industry, exciting to students, valuable to faculty, and academically sound. Partner firms/organizations currently include: American President Lines, Andersen Consulting, Fluor Daniel, Hewlett-Packard, Hitachi America, Intel, Pacific Bell, Pacific Gas & Electric, Santa Barbara Research Center, Sun Microsystems, Tandem Computers, TRW, the U.S. Navy Surface Warfare Center, and Xerox. This set of firms and organizations (representing products, services, high technology, utilities, construction, defense, and consulting) is highly diverse; yet all are in need of highly integrative and innovative approaches that encompass engineering, business, and people issues.

The EMP is becoming an increasingly innovative and customer-needs driven program as additional firms are being attracted to join the Partnership. The industry partners actively participate with Cal Poly faculty in a broad range of EMP matters. These include: partner needs identification, quarterly partner meetings, EMP development, graduate internships, collaborative team projects, culminating seminars, curriculum revisions, and continuous improvements to the EMP. This unique

opportunity offers several benefits to the industry partners, that include:

- enhancing productivity and competitiveness of U.S. industries;
- infusing cross-disciplinary, team, and partnership processes within and across the industry, education, and government sectors;
- receiving image-building publicity of involvement in educational leadership;
- obtaining valuable outcomes of team projects tailored to the partner firms' needs; and
- acquiring in-depth information on prospective employees.

Industry partners, Cal Poly faculty, and EMP students all receive numerous direct benefits from the EMP at Cal Poly. The EMP partners believe that the EMP integrated model to education will become increasingly important to them and to our nation in responding to accelerating change and increasing global competitiveness.

The EMP Partnership Mission and Goals

The following Mission and Goals statements for the EMP were developed jointly by the faculty and industry EMP partners.

Mission

The EMP is a partnership between Cal Poly, industry, and government to create and deliver educational leadership for improving the competitiveness of U.S. industries. The key element of the EMP is to develop high quality graduates who will be facilitators of change and integrators of engineering, business, and people issues.

Goals

- To focus on critical current and future technological and competitive issues in service, construction, and manufacturing firms.
- To utilize the highly collaborative industry, university, and government partnership to provide leading-edge material in the classroom and to develop practical "hands-on" graduates aligned with critical issues.
- To develop graduates who are effective as change agents, leaders, facilitators, and team builders with a clear vision and focus on critical issues.
- To infuse integrative, systems, holistic processes for cross-organizational problem solving and change implementation.
- To provide continuously improving collaborative learning experiences for industry, academic, and government partners.
- To adapt proactively and continuously as part of the Total Quality Education processes of the program.
- To promote innovative modes of operation for academia and industry.

EMP Strategy Implementation

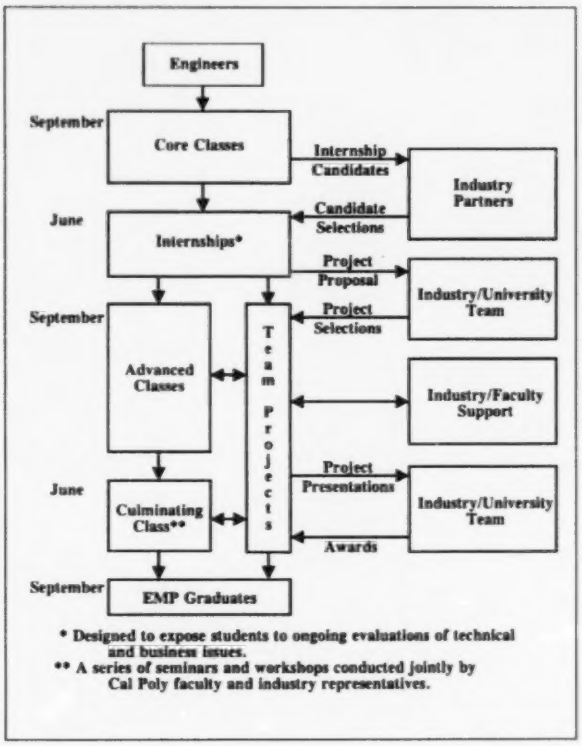
The strategy is to provide a business and engineering curriculum that is integrated with industry sponsored "learn by doing" components. The "learn by doing" components address actual ("real-world") problems and opportunities of the industry partners involving students, faculty, and partner firmss/organizations in a collaborative learning environment. During the second year of the program, teams consisting of students, faculty from the Colleges of Business and Engineering, and industry sponsors/mentors work on team projects that were developed by the students during their first summer internships. This and other activities with representatives from industry make the formal academic portion of Cal Poly's EMP integrative, up to date, and responsive to customers.

Formal Academic Curriculum

The figure on the next page depicts the EMP Partnership Strategy implementation and shows how the formal academic curriculum is integrated with the "learn by doing" components. The academic curriculum sequence is shown on the left side of the figure. It consists of three segments:

- **Core Classes** are offered during the first year by the Colleges of Business and Engineering. These are mostly core graduate business classes designed to give entering engineers a background in business.
- **Advanced Classes** are offered during the second year of the EMP. These classes from both colleges emphasize current and future technological and competitive issues for manufacturing and service firms.

- **Culminating Class/Seminars** is a class (organized as a set of seminars) involving students, faculty, partner representatives, and other industry participants. It is highly integrated with the "learn by doing" components that are described below.



"Learn by Doing" Components

Cal Poly's "learn by doing" motto refers to the practice of "students getting experience as part of their education." Cal Poly's EMP is based on the belief that the best way for someone to learn something is to do it. The "learn by doing" portion of the EMP has three components. All three tightly integrate academic and industry perspectives, and all are mutually beneficial to students, faculty, and industry partners. The three components are:

- **Graduate Internship** experience is gained by EMP students during the first summer,
- **Team Project** begins during the Internship and continues throughout the second year, and
- **Culminating Class/Seminars** is jointly conducted by faculty from the Colleges of Business and Engineering, representatives from industry partner firms, and other experts in critical areas.

Graduate Internship

All EMP students will participate in the Graduate Internships during the first summer of their programs. Internship opportunities are made available primarily by the industry partner firms/organizations. During the internship period, EMP students work with mentors within the sponsoring firms and organizations to develop proposals for the Team Project to be conducted during the second year of the EMP.

Team Projects

The Team Projects involve the investigation of real and unstructured problems or opportunities within the partner firms/organizations that cover critical issues in both business and engineering. Each "team" consists of one or more students, a faculty member from each College (Business and Engineering), and a mentor from the partner firm/organization.

Each student/faculty/partner team works on their project during the second year. Preliminary directions, progress reports, and final results are presented at the quarterly partner meetings during the second year. These meetings are attended by all partners, by EMP faculty, and by first and second year EMP students.

Final Team Project presentations and award selections for outstanding projects occur during the second summer concurrent with the Culminating Seminars. Exemplary Team Projects may be selected as an integral part of the seminars to provide leading-edge benchmark cases for review and discussion. EMP students will play a central role in those reviews and discussions.

Benefits derived from the Graduate Internships and Team Projects are the following:

- EMP students gain experience with firms and organizations on managing important and timely technological projects and competitive issues of importance to partner firms.
- Cal Poly faculty gain first-hand involvement with current and future technology management problems and issues. Faculty can then integrate these experiences into future curricula and research.
- Participating partner firms/organizations are able to get an up-close look at prospective employees, and also obtain useful results from the intensive examinations conducted by Project Teams on problems, opportunities, and issues confronting partner firms/organizations.

Culminating Class/Seminars

During the second summer of the EMP, students, faculty, and partners are brought together in an intense and interactive series of sessions that represent the final Culminating Class for students. The series also provides an important and timely Summer Seminar Series for industry partners and representatives of other firms and organizations.

As a **Culminating Class**, it is a true interdisciplinary offering that brings together the training and experience of: faculty from the Colleges of Business and Engineering, EMP students with various backgrounds, expert representatives from the partner firms and organizations, other experts, and knowledgeable participants from industry and government for group discussions.

The class is conducted as a **Summer Seminar Series** that is open to representative from industry on a fee basis. This integration of a degree program class with executive education type sessions offers a synergy that is seldom found at universities. Industry representatives provide a reality and quality check on the culminating class, and the EMP students get a chance to observe and mingle with experienced people from industry.

During the Summer Seminar Series, presentations and discussions investigate problems and opportunities involving critical issues facing organizations that are becoming "World-Class" and that are sustaining that position. The unifying theme of the 1993 Summer Seminars was **"Managing Change For Competitive Advantage."** The themes of the individual seminars were:

- Business Models For World-Class Organizations,
- Successfully Managing World-Class Organizations,
- Past Presidents Perspectives,
- Managing Quality,
- Building High Performance Teams, and
- Re-Engineering The Organization.

The unifying theme for the 1994 Summer Series will be **"Future Directions for Winning Organizations."** The themes of the individual seminars will be:

- Executive Perspectives for the 21st Century,
- The Information Revolution,
- Knowledge-Based Organizations,
- High Performance Teams, and
- Beyond the Buzzwords.

As in 1993, each seminar will be organized around keynote speakers, presentations by industry experts and by faculty from the Colleges of Business and Engineering, and panel discussions. Some of the sessions are "success stories" which are in-depth case studies that are presented by a mix of industry partners and faculty as appropriate. The results from a few Team Projects could also be selected as case studies for presentation.

Program of Study

Detailed program information will be furnished on request.